The quantity of heat Q would, however, at the moment of origin of the gases be completely taken up by these, and be represented by the expression Q=ct.
t is known to be 1,150° and the specific heats for CO, H and N are at 1,150° taken at 0-3515. Therefore, for the 1 cubic metre gas taken into consideration, Q=ci=l,150xO'3515~404"2 calories . . . (e).
Consequently, from (e) and (d) and in this from (c)
inserting this gives
404'2=63+1,2S3# -8,453a5+2,934
.-. 7",170a;=2,592-8 or
x=0-361 cubic metre CO
as y=3'27o3—1,135 .... y=0*047 „ H
as £=1— x—y.....z=0*592 ,, N
Total . . . _=1-000 cubic metre gas.
100 cubic metres gas, therefore, contains in relation to composition in vols. per cent, of steam-air gas manufactured from cold air and carbon at a reaction temperature of 1,150°:—
CO=36-1 per cent.
H = 4*7 „ N =59-2
From gas of this composition, the quantity of gas which one would obtain from 1 kilogramme C may be estimated. In 100 cubic metres of the gas there are 36*1 cubic metres of C-contain-ing gases (in the foregoing case only CO is present). According to formula (17), this corresponds to 0*538 x36-l=19'4 kilogrammes C, and 1 kilogramme C will furnish -^-=5*14 cubic
metres gas.
. As the product of the figure 0'538 times the volume of C-containing gases, and the quotient which results from dividing 100 by this product, is frequently brought into use in gas calculations, a table is appended, from which the required amounts can be taken direct. B.S. E